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SHIFTS IN MATHEMATICS INTERACTIONS BETWEEN GRADE 8 STUDENTS FROM AN ENACTIVIST PERSPECTIVE

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While many studies (e.g., Chapman, 2004) focus on the interaction of the students and teacher in mathematics classrooms, there is little focus on how mathematics emerges from the details of their interaction. In this study, the research question is: How is the emergence of mathematical knowing shown in the details of the shifts in interactions between students?

To understand how the interactions in detail amongst students within a mathematics classroom occur, I adopted an enactivist position, in which “every act of knowing brings forth a world” (Maturana & Varela, 1992, p. 26), a mathematics world from each student that can be triggered by the interactions with others. The analysis carried out considered two levels of observation based on Rosch (1978), basic-level, close to actions (e.g., categorisation of questions, answers used) and superordinate level, from analysis of transcripts, of how the actions are interrelated. Making such distinctions is part of my enactivist approach.

I present the analysis of two transcripts that come from video-recordings and observation notes of a mathematics teacher and their 23 students (aged 13-14 years). Students were working in their usual way on solving problems and also engaged in a mathematical modelling task that was new to them. These observations are part of a large project characterising the emergence of mathematics in interactions.

The study shows a number of shifts, for instance, that when the students were interacting, there is a space, a basic-level distinction, which I have called an interval of waiting, triggered by an intervention (for instance, a question or statement) made by one student to another. At a superordinate level, seen through the transcripts, the “interval of waiting” allows the distinction of a “new start” to be made in the actions performed in the emergence of mathematical knowledge. Ongoing analysis will look at how basic-level and superordinate shifts allow me to observe the different foci of attention of the students solving the same mathematics problem.

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